

The Integrated Deepwater System Program

Command Master Chief Conference



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Solution: Integrated Deepwater System



Performance Based Approach:

- Focus on Capabilities not Assets
- Mission-based performance acquisition approach

Acquisition Strategy:

- Innovative System of Systems Approach
- Collaborative Industry Partnership

Overarching Objective:

- Maximize Operational Effectiveness while Minimizing Total Ownership Costs

U. S. Coast Guard Missions



Maritime Safety

Search and Rescue
International Ice Patrol

Maritime Mobility

Lightering Zone Enforcement
Foreign Vessel Inspection

Maritime Security

Drug Interdiction
General Enforcement of Laws and Treaties
Alien Migrant Interdiction

National Defense

Homeland Security
General Defense Operations
Maritime Interception Operations
Military Environmental Defense Operations
Port Operations, Security, & Defense
Peacetime Military Engagement
Coastal Sea Control

Protection of Natural Resources

Marine Pollution Enforcement & Response
Living Marine Resource Enforcement

Current Coast Guard Capabilities



1985-2005

17 yrs



28 yrs

1984-2004



1972-1997

30 yrs



37 yrs

1965-2008



1964-2007

38 yrs



12 yrs

1990-2005



1982-2002

20 yrs



28 yrs

1982-2013



Positives:

- Effective multi-mission capability
- Record cocaine seizures 3 years running
- Innovative endgame initiatives

Negatives:

- Missed opportunities – can't respond to all available intel
- Huge coverage gaps exacerbated by complex cases
- Insufficient C4ISR to mitigate resource gaps

Year First Commissioned

Expiration of Planned Service Life

System Solution – Assets

Maritime Patrol Aircraft (MPA)



High Altitude UAV



HC-130



VTOL Unmanned Air Vehicle (UAV)



VTOL Recovery and Surveillance Aircraft



Multi-Mission Cutter Helicopter

Offshore Patrol Cutter (OPC)



National Security Cutter (NSC)



Fast Response Cutter (FRC)



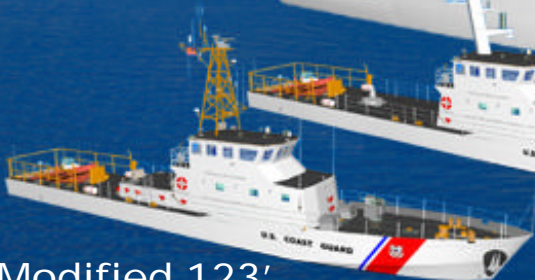
Short Range Prosecutor



Long Range Interceptor



Modified 123' Patrol Boat

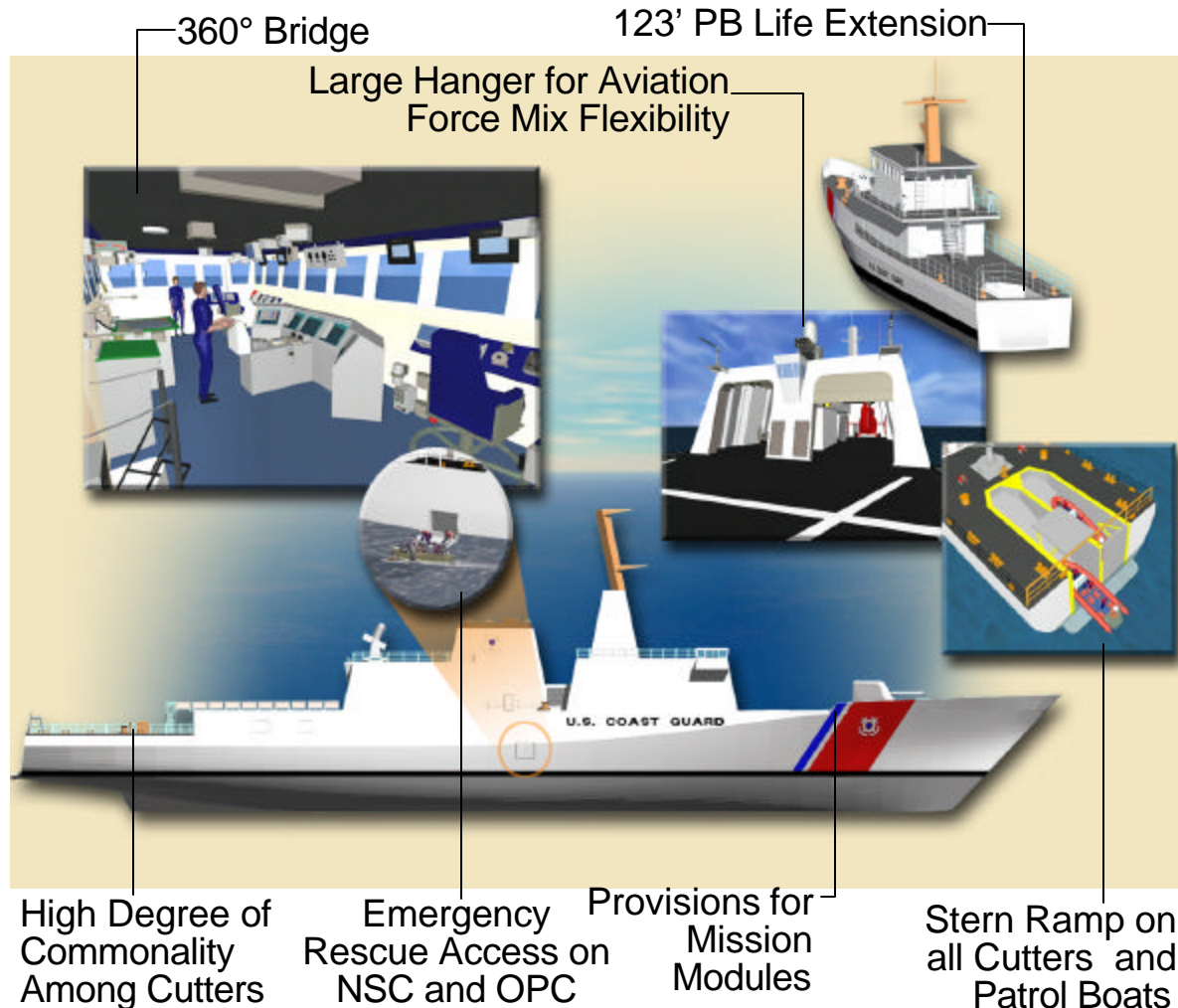


Surface Assets



Capability Improvements

- New Cutters Designed With Mission and Capability Growth
- Provisions for Interchangeable Mission Modules to Enhance Flexibility Tailored to Missions
- Stern Ramps on All Cutters and Upgraded Patrol Boats Enhance Small Boat Launch and Recovery Operations With Less Crew
- Dramatically Improved Habitability Features Include 2/4 Person Staterooms, Fitness Centers, Lounges, and Learning Centers



NSC Characteristics



National Security Cutter [Delivery 2006 – 2013]

Endurance/Range	60 Days / 12,000 nmi	Length	421 ft, LOA
Fuel	650 tonnes	Beam	54 ft
Crew, OFF/CPO/ENL	18/12/88	Draft	20.9 ft
Propulsion Plant	CODAG	Displacement	3,886 tonnes, Full Load
Electric Plant	2 SSDGs + 1 Emergency Gen	Speed	28.1 kts (Sustained at 85% MCR)
Ship Control	Integrated Bridge		29.1 kts (Max at 100% MCR)



OPC Characteristics



Offshore Patrol Cutter [Delivery 2012 – 2022]

Endurance/Range	45 Days / 9,000 nm	Length	341 ft, LOA
Fuel	400 tonnes	Beam	54 ft
Crew, OFF/CPO/ENL	14/8/72	Draft	17.25 ft
Propulsion Plant	2 Diesels	Displacement	2,922 tonnes, Full Load
Electric Plant	2 SSDGs + 1 Emergency Gen	Speed	22 kts (Sustained at 85% MCR)
Ship Control	Integrated Bridge		23 kts (Max at 100% MCR)



FRC Characteristics



Fast Response Cutter [Delivery 2018-2022]

General Characteristics:

Overall Length 130 ft
Maximum Beam 21.8 ft
Draft, Full Load 7.33 ft
Accommodations 19
Typical Operating Crew 15
Propulsion (2) Diesel Engines 3,800 HP
Speed 30 kts
Endurance 7 Days
Displacement 198 LT
Range 5,000 nm
Mission Modules (Provisions for) 1 Aft

- Weapons—Stabilized 30mm and 0.50 cal Guns
- Stern Ramp Accommodates 1 SRP
- Replenishment—Fueling at Sea, Vertical Replenishment
- Increased Habitability—2/4-Person Staterooms
- High Commonality With NSC and OPC
- Reduced RCS—Reduced Signature Through Shaping
- 360° Bridge
- Standard Tow Bitt



123' WPB Characteristics

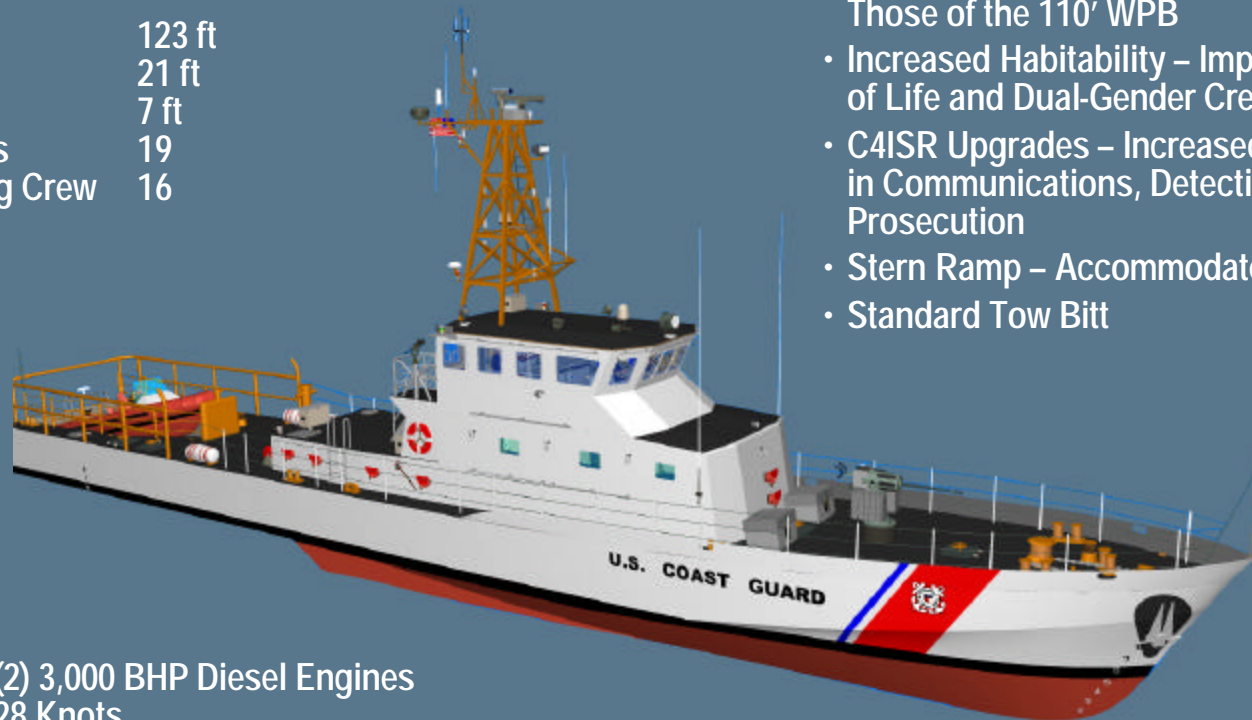


123' Patrol Boat (Legacy 110' SLEP) [Delivery 2003–2010]

General Characteristics:

Overall Length	123 ft
Maximum Beam	21 ft
Draft, Full Load	7 ft
Accommodations	19
Typical Operating Crew	16

- Performance — Endurance, Speed, and Seakeeping of the 123' Comparable to Those of the 110' WPB
- Increased Habitability – Improved Quality of Life and Dual-Gender Crew Capable
- C4ISR Upgrades – Increased Capabilities in Communications, Detection, Prosecution
- Stern Ramp – Accommodates 1 SRP
- Standard Tow Bitt



Propulsion	(2) 3,000 BHP Diesel Engines
Max Speed	28 Knots
Endurance	5 Days
Displacement	A/B/C Class 174/164/162 LT
Range	3180/3380/3300 nm

LRI and SRP Characteristics

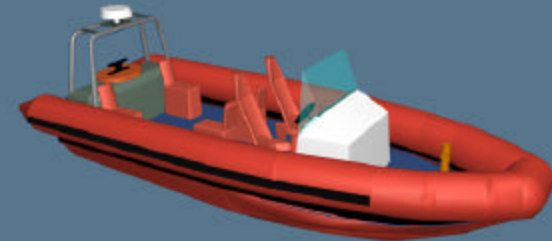


LRI and SRP [Delivery: 2003 – 2022]



Long-Range Interceptor

- **Propulsion** – Water Jet Engines for Stern Ramp Capability
- **Capacity** – Up to 14 Personnel With 150 lbs of Cargo
- **Speed** – 45 Knots



Short Range-Prosecutor

- **Propulsion** – Water Jet Engine for Stern Ramp Capability
- **Capacity** – Up to 10 Personnel With 150 lbs of Cargo
- **Speed** – 36 Knots

Features		Benefits	
LRI			
• Slam-Mitigating Seats		• Decreased Fatigue for Boarding Teams	
• Enclosed Coxswain Station		• Increased Control and Handling	
• Radar		• Faster, More Effective Prosecution	
• Over the Horizon Capability With Satcom and GPS		• Extended Cutter Reach	
• Stern Ramp Deployment/Recovery		• Faster, Safer Operations With Less Crew	
SRP			
• Slam-Mitigating Seats		• Decreased Fatigue for Boarding Teams	
• Improved Communication		• Increased Control	
• Excellent Sea-Keeping		• Prosecution in Rough Water	
• Stern Ramp Deployment/Recovery		• Faster, Safer Operations With Less Crew	

Aviation Assets



Communications

- Military SATCOM
- INMARSAT-B
- COMSATCOM
- HF/VHF/UHF radios
- Tactical Data Links
- SIPRNET & CGDN+
- Crypto Devices

Sensors

- Surface/Air/Weather/ISAR radars
- (Near Future - Multi-Mode Radar)
- Radio Direction Finding
- Electro-Optical / Infrared
- Night Vision Goggles

Integrated C2

- Common C2 System
- Multi-Operational Consoles
- Local Tactical Picture
- Common Tactical Picture

New C2 and Sensors on MCH are Common With The VRS

Range Endurance Allows Operation from Only 2 Sites



MPA Features a Palletized Fully Integrated Tactical System

VRS is Shipboard Deployable on The NSC, OPC, and Major Legacy Cutters

Each NSC or OPC Carries Up to 4 VUAVs

MPA Characteristics



EADS CASA HC-235 "Persuader" MPA – Delivery 2005-2012

General Characteristics

Length	70 ft 2 in
Wing Span	84 ft 8 in
Cabin Length	31 ft 8 in
Cabin Height	6 ft 2 in
Cabin Width	8 ft 11 in
Maximum Take-off Weight	38,140 lb
Maximum Landing Weight	36,376 lb
Maximum Payload	15,794 lb
Fuel Capacity	2,025 gal
Number of 88" x 108" Pallets	4
Maximum Cruising Speed	246 ktas

Take-off Distance to 50 ft (S/L, ISA, MTOW)	2,472 ft
Landing Distance from 50 ft (S/L, ISA, MTOW)	1,977 ft
Maximum Range	3,055 nm
Range with 4000 kg Payload (8800 lb)	1,550 nm

Engines 2 x General Electric CT7-9C3 of 1750 SHP Each

Propellers Hamilton Standard 14RF-37 (Four Bladed)

- Proven Military Twin Turboprop
- Extended Range Fuel System
- In Service as MPA
- Most Cost-Effective MPA Alternative

- Palletized Fully Integrated Tactical System
- Quick Change to Cargo or Passenger Role
- Rear Cargo Ramp



FLIR/EO

Radar Radome

Observation Bubble Window

MCH Characteristics



HH-65 MCH – Delivery 2005-2015

General Characteristics

Length	46.91 ft (44.4 ft)
Wing/Rotor Span	41.33 ft Wingspan
Maximum Takeoff Weight	10,582 lbs (9,200 lbs)
Payload Weight (w/Fuel)	3,190 lbs
Empty Weight	6,333 lbs
Fuel Capacity	2,164 lbs (1,969 lbs)
Maximum Airspeed	165 kts
Cruise Speed	120 kts
Economy Speed	75 kts
Service Ceiling	15,000 ft/ 7,510 ft Hover
Maximum Endurance	3.5 hrs (2.9 hrs)
Maximum Range	467 nm (348 nm)
Operational Radius	178 nm (109 nm)
Propulsion Type	Turbomeca Arriel 2C2 (LTS-101)
Number of Engines	2
Cargo Sling Hoist Capability	1,500+ lbs
Rescue Hoist Capability	600 lbs

- Leverages USCG Legacy Asset
- Low-Cost, Low-Risk Major Airframe Upgrade
- Increased TOGW, Range, Endurance

- New Avionics Common Fully Shipboard Deployable
- Margins for Use in Armed Helo Role
- Complements VUAV on NSC, OPC, and WMEC 270



Upgrade

4-Blade Main Rotor



Improved Fenestron

Extended Nose

VRS Characteristics



Bell-Agusta Aerospace AB-139 VTOL Recovery and Surveillance (VRS) Delivery 2014-2022

General Characteristics

Length O/A	54.67 ft
Max Airspeed	185 kts
Cruise Airspeed	157 kts
Economy Airspeed	80 kts
Service Ceiling	16,750 ft
Maximum Endurance	5.0 hrs
Maximum Range	511 nm
Propulsion	2 Pratt & Whitney PT6C-67C
Cargo Ceiling Capacity	6,000 lbs
Rescue Hoist Capacity	600 lbs
Radius Of Action (SAR)	211 nm
Main Rotor	5 Blade Fully Articulated Elastomeric
Tail Rotor	4 Blade Fully Articulated Elastomeric
FAA Single Pilot IFR	Certified 3/2003
Rotor Span	45.27 ft
Max T/O Weight	14,550 lbs
Useful Load	5,250 lbs
Fuel Capacity	4,088 lbs



VUAV Characteristics



Bell HV-911 "Eagle Eye" VTOL Unmanned Air Vehicle – Delivery 2006-2018

Flight-Ready Configuration

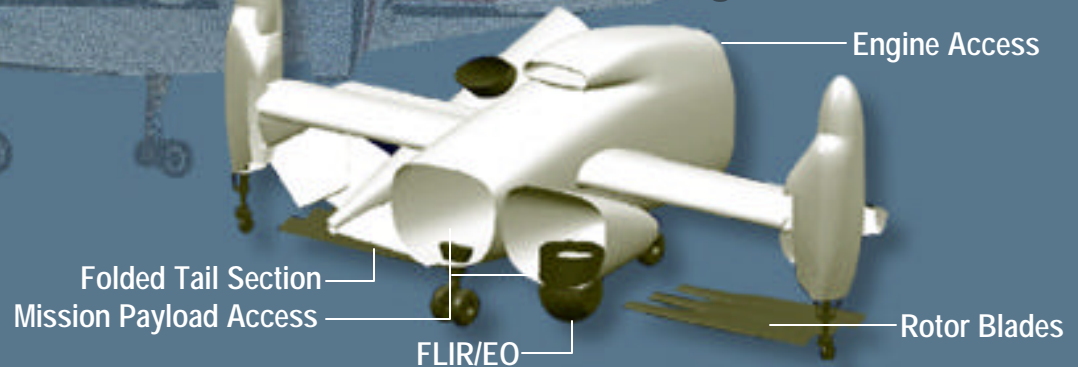


FLIR/EO

General Characteristics

- All Composite Construction
- Fully Shipboard Deployable
- Low Maintenance (<1 MMH/FH)
- Up to 4 VUAVs per NSC or OPC
- Modular Mission Payloads (FLIR/EO, Radar, etc.)
- High Speed Dash (220 kts), Cruise (200 kts)
- Airplane Loiter (90 kts)
- 5 Hour Endurance
- Maximum Height 5.7 ft
- Maximum Length 17.23 ft
- Maximum Wing Span 23.6 ft

Stowed Configuration



Engine Access

Folded Tail Section

Mission Payload Access

FLIR/EO

Rotor Blades

HAEUAV Characteristics



Northrop Grumman RQ-4A VTOL High Altitude Endurance (UAV) – Delivery 2016



Payload Bay Can
Accommodate up
to 2,000 Pounds of
Payload

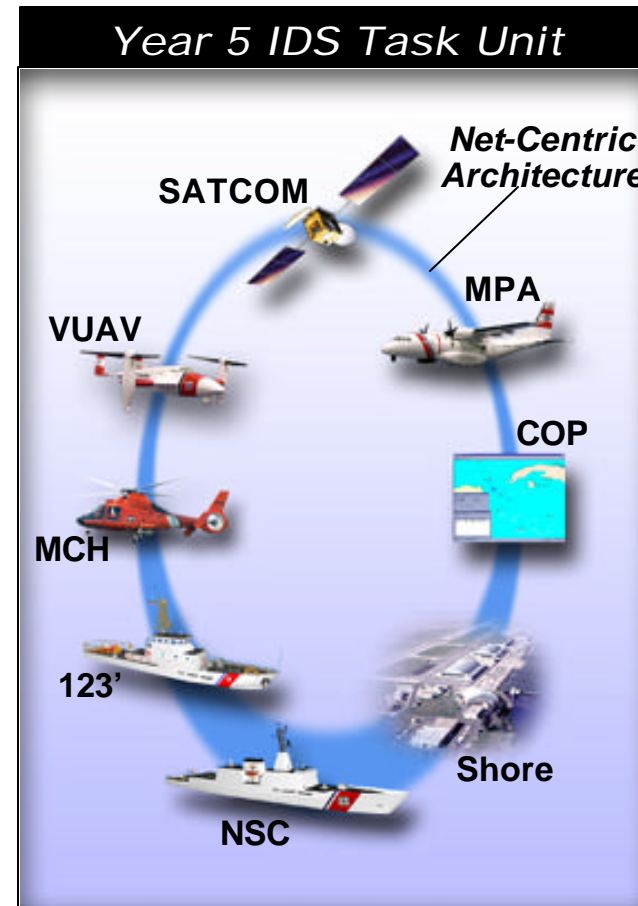
General Characteristics

- DoD Surveillance Asset
- Low Risk After USAF Production, Testing, Fielding
- Huge Surveillance Areas Covered per Mission
- >3,000 nm Range, >30 Hours Endurance
- High-resolution Sensors (FLIR/EO, SAR, ISAR/GMTI)
- Range Endurance Allows Operation from Only 2 Sites
- Centralized Control from Ground Control Station
- GCS Integrated into CG-C2 System

General Specifications

- Power Plant: Single Allison AE3007H (Approximately 7,000 Pounds Thrust)
- Length: 44 feet
- Height: 15 feet
- Weight: Approximately 25,600 Gross Take-off Pounds
- Wingspan: 116 feet
- Speed: 300 to 400 Kt True Air Speed (KTAS)
- Range: 1,200 nm Radius with 24 Hours On Station
- Loiter Altitude: 50,000 to 65,000 feet
- Fuel Capacity: 14,800 Pounds, JP-8

System of Systems at Year 5



- Fully Interoperable C4ISR Network-Centric Architecture
- Low Risk Transition to Full Capability

Asset Deployment



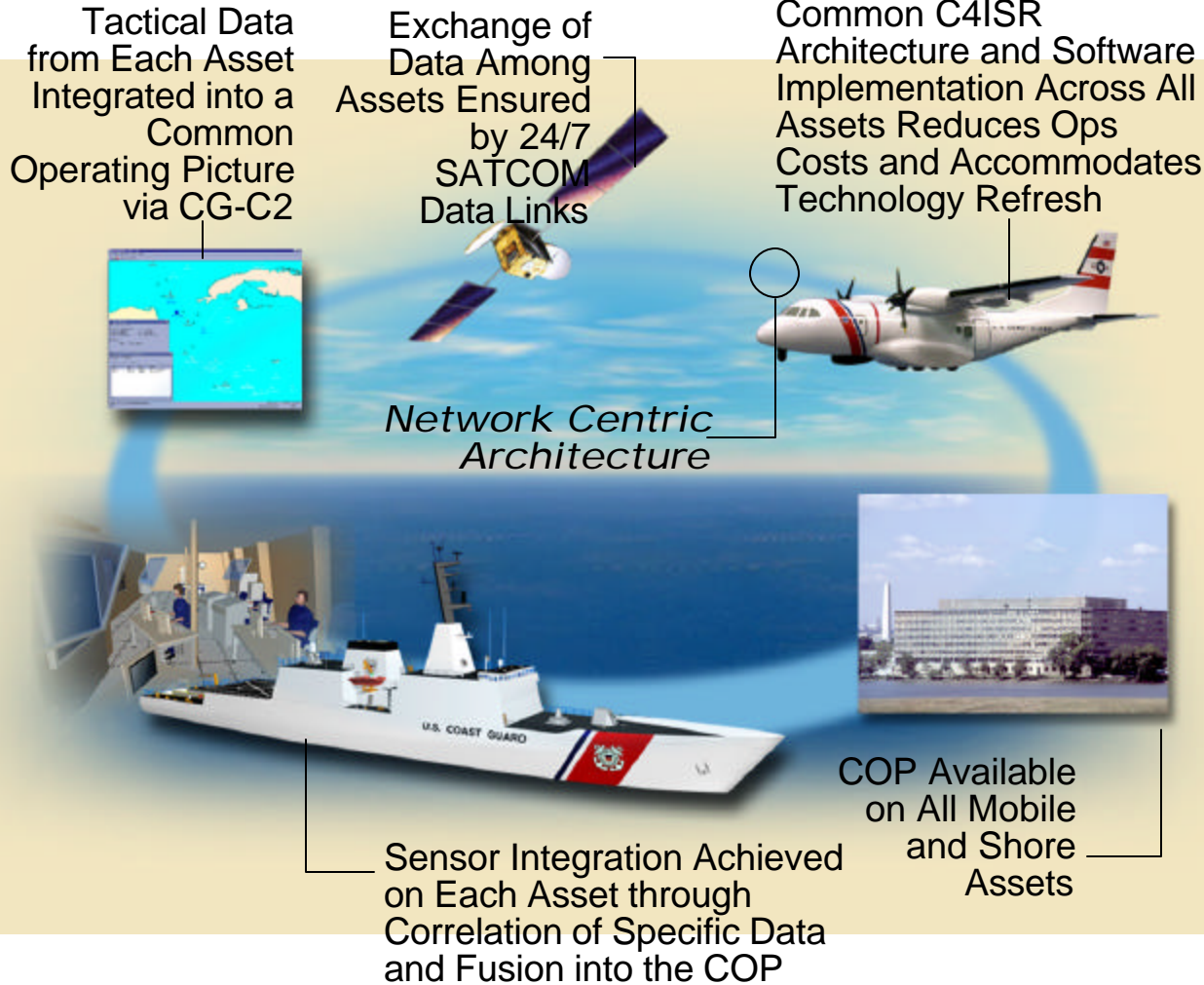
<i>Surface</i>	Base Period	End State
NSC	1	8
OPC	-	25
123'	25	49
FRC	-	58

<i>Aviation</i>	Base Period	End State
MPA	12	35
MCH	5	93
VRS	-	34
VUAV	8	69
HUAV	-	7



Early asset delivery contributes to increasing operational effectiveness and lowers TOC.

The C4ISR Capability



Capability Improvements

- **Common Command and Control Systems is Fully Integrated With All Sensors, Communications, and Legacy Interfaces**
- **Interoperability and Maritime Domain Awareness Established by IDS Assets and National Sources**
- **Imbedded Technical Refresh to Prevent Future Obsolescence**

Early Increased Situational Awareness, Surveillance, and Command is Provided through a Common Operating Picture to Answer Homeland Security Requirements

The Manpower and ILS Enhancements



Asset Introduction
Training

Condition-Based
Maintenance

Personal Digital Assistant
(PDA) Maintenance
Support



Modernization and
Technology Insertion

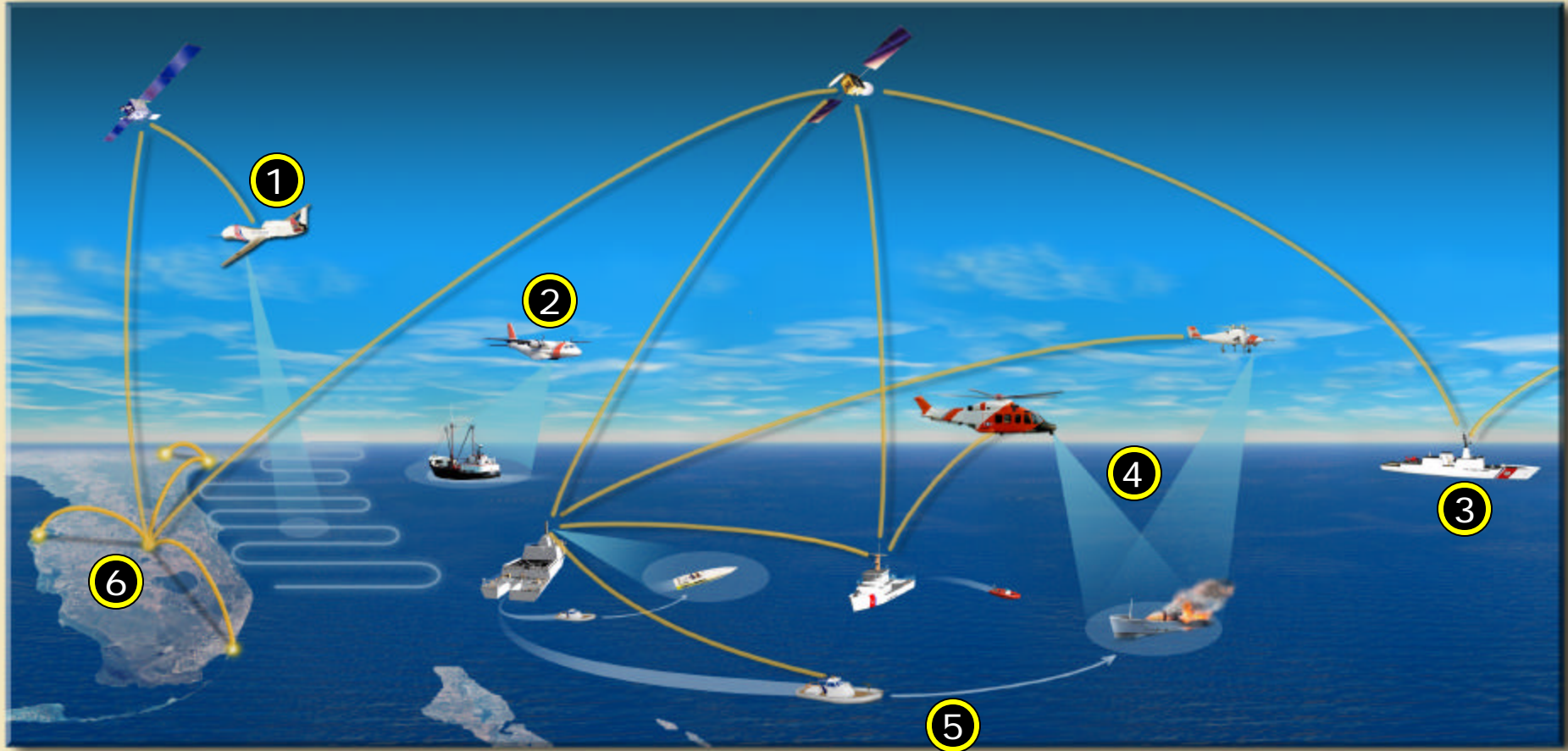
Computer-Based
Training

Capability Improvements

- Increased Automation Reducing Operator Workload, Training Requirements, and Enables Condition-based Monitoring
- Integrated Product Data Environment (IPDE) Maintains a Single, Authoritative Data Set Program-wide for Program Performance and Metrics
- Equipment Selection, Sparing, and Training Based on RMA Improves Readiness, Availability, and Supports System Response Reducing Operating Expenses

***Increased Automation and State-of-the-Art
Technology, Decreased Manpower Requirements
and Reduced Total Ownership Cost***

CONOPS Summary



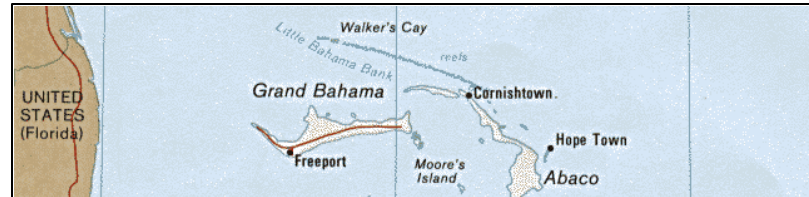
- 1 HAEUAV Wide Area Surveillance
- 2 MPA Prosecution
- 3 NSC Interoperability

- 4 Multi Asset Operation
- 5 Over-the-Horizon Operations
- 6 Shore-based Command Center

Global Mission Execution



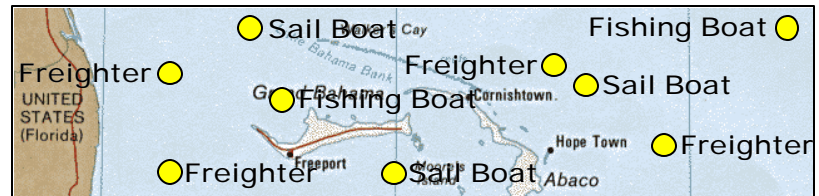
Surveillance



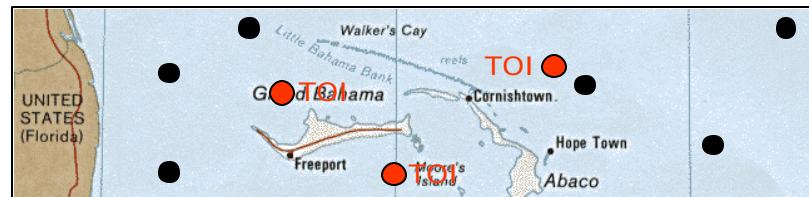
Detection



Classification



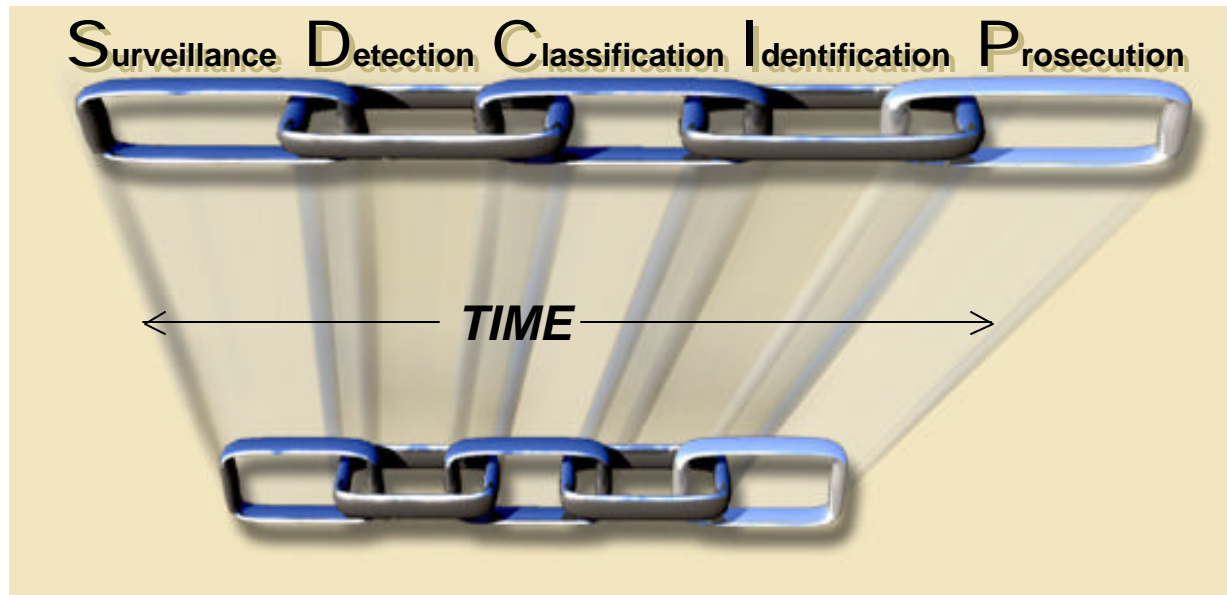
Identification



Prosecution



Compress SDCIP Chain

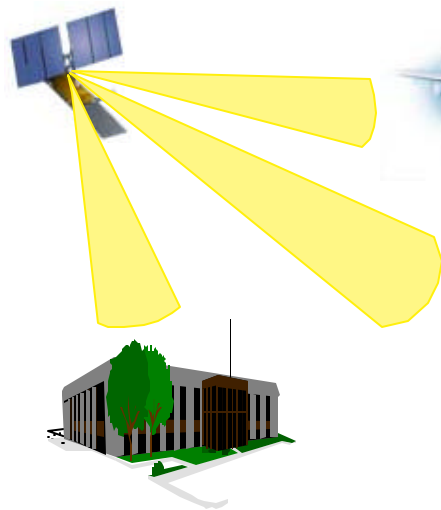


- Minimize False Prosecutions
- More Effective Patrols
- Improved CONOPS

Reduce Cost / Mission



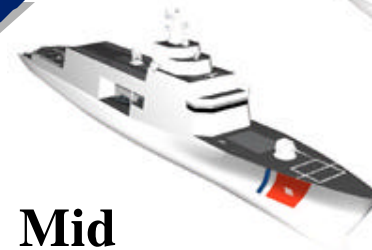
Maritime Domain Awareness



- Shore operations
- Intel support
- Data support
- DoD interaction
- Other agencies



Far



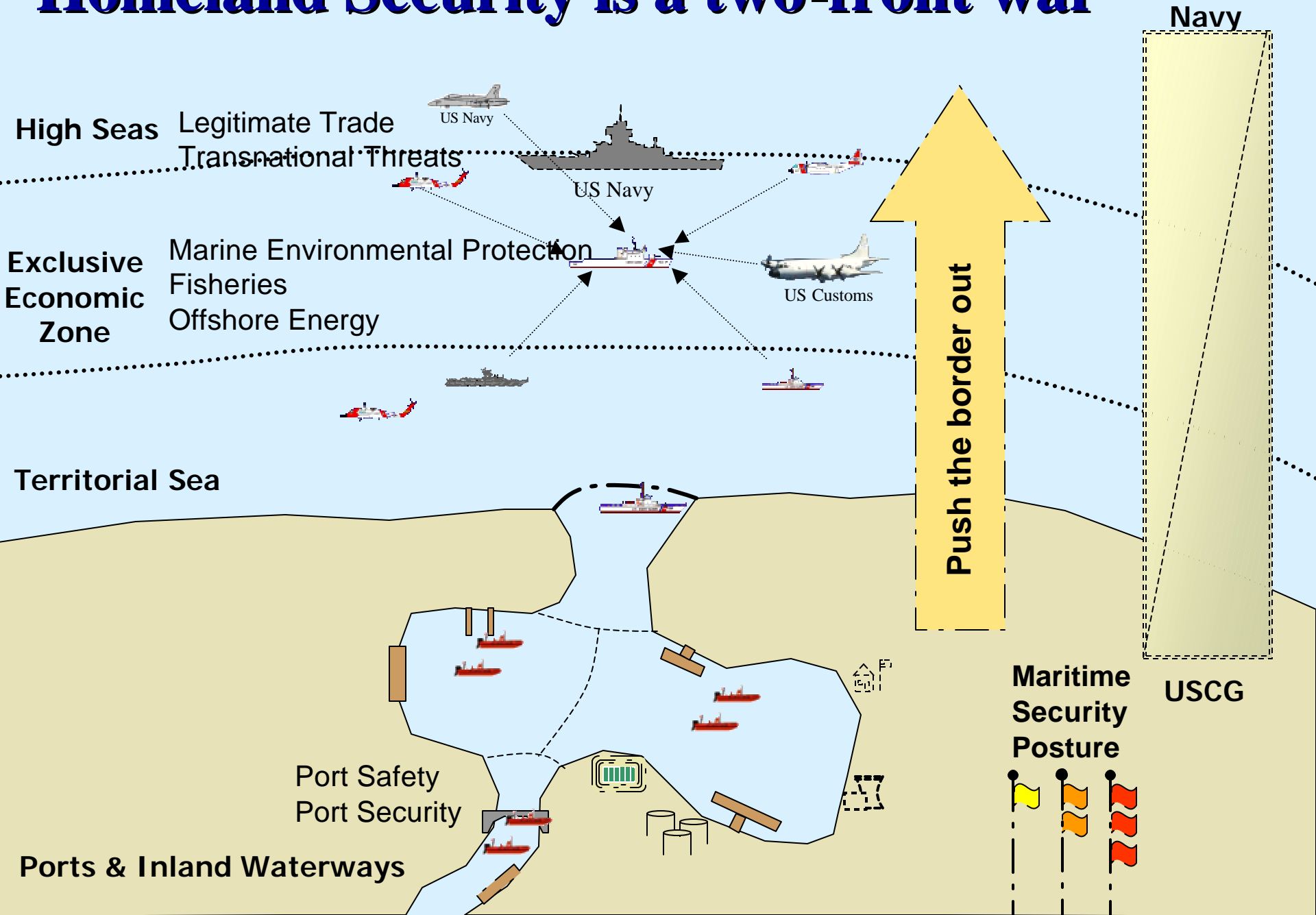
Mid



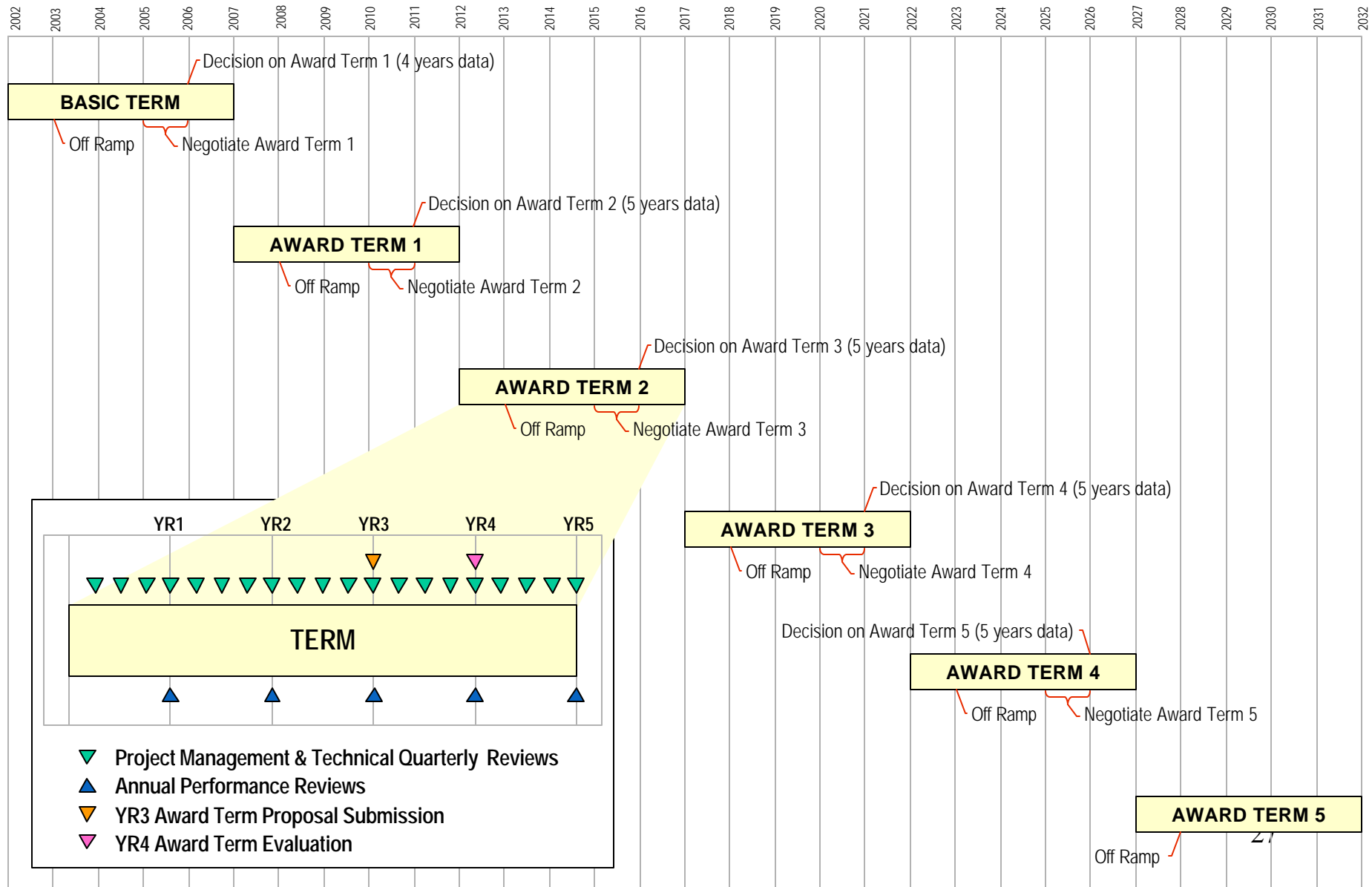
Near

Operational effectiveness is enhanced by a shared common information set

Homeland Security is a two-front war



System Integrator Monitoring and Management



Top Program Risks



- Funding Appropriations Stream Sustainment
 - FY03 and Beyond
 - Flexibility within reason – trade space
 - Dealing with appropriations long term
- Phase 2 Organizational Expansion
 - Scope and gravity of service impact demands a large, comprehensive and insightful plan
 - Aggressive timeline for development
 - Agility and adaptability are required
- Operational Effectiveness Measurement

“We must make sure that our Coast Guard has a modern fleet of vessels.”

President George W. Bush
25 January 2002

“Our men and women in uniform deserve the best weapons, the best equipment, the best training...”

President George W. Bush
State of the Union Address
January 2002

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